Physics 331

RICE UNIVERSITY

The course web page, http://www.owlnet.rice.edu/~dodds/phys331.html, contains extensive topical notes and write-ups for all the required exercises. Additional material on statistical methods can be found in Bevington, "Data Reduction and Error Analysis For the Physical Sciences", available in the bookstore.

Apparatus for each week's exercise will be available in the Physics Teaching Lab area in the basement of Herzstein Hall. You may obtain the door code from Dr. Dodds in HRZ 215. The building is accessible outside of normal hours with a Rice ID through the north-side door (facing Duncan Hall).

Due Dates Fall 2014
Early submissions are always welcome, while late work will be penalized at the rate of 5 percentage points per day late. Reports and problem sets will not be accepted more than 10 days after the due date or the end of finals, whichever is earlier. All assignments must be completed in order to pass the course.

The graded work for the semester will consist of:

A report on the Analog Circuits exercise: Due by 5:00 PM Monday September 15, 2014
A report on the Digital Circuits exercise: Due by 5:00 PM Monday October 6, 2014
The Data Analysis exercise: Pledged problem set available for pickup from HRZ 215 Tuesday October 7, 2014. Due by 5:00 PM Friday October 17, 2014.
A report on the Noise Reduction exercise: Due by 5:00 PM Monday November 10, 2014
A report on the Particle Counting Exercise: Due by 5:00 PM Tuesday December 9, 2014

Course Policies

The experimental work is semi-self-paced, but you must read the safety notes below before beginning experimental work. Reviewing the experimental set up with the instructor will save you the time and wasted effort otherwise spent chasing parts or malfunctions. In the event that problems arise in the course of your work, get help from the instructor. You are not expected to solve all possible problems on your own.

You may work with at most one partner if you wish, but it is not required. In any case, each student is expected to be familiar with all phases of the experiment and to produce an independent report of the results.

In order to complete the course you should plan to work at least one afternoon per week, preferably on a regular schedule. The deadlines define a minimum pace for successful completion of the course. Note also that the amount of equipment is limited, so it will be impossible for all students to do an experiment immediately before a deadline.

Resources
Instructions for the required exercises are provided below, in pdf format. Background information can be found in the topical notes listed, and in the textbook by Bevington, "Data Reduction and Error Analysis", available in the bookstore.

Laboratory Exercises
Analog Circuits
Digital Circuits

Data Analysis and Presentation
Noise Reduction
Particle Counting

Topical Notes

Safety Notes
Digital Circuits
Analog Circuits
Making Circuits Work
Dimensions, Units and Conversions
Error Analysis and Significant Figures
Using Figures - The Basics
Graphing Examples
Plotting Data With Microsoft Excel
Noise Reduction
Particle Counting Methods
Particle Counting Statistics
Operation of NIM Modules
Additional Souces

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